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PART XI: Site Assessment

Chapter 34

DIFFICULT SITE CHARACTERIZATION DUE TO TOPOGRAPHIC SITE CONDITIONS AND HISTORIC SITE USE

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Abstract: Many Brownfield sites contain areas where intrusive investigations cannot be readily conducted due to unstable ground conditions. Described in this paper are the means used at the Former Oxford Paper Mill Site in Lawrence, Massachusetts, to assess and remediate an unstable area containing asbestos and elevated levels of PCBs. An area totaling approximately 35 feet wide by 200 feet long contained many voids created by partial demolition of basements and subsequent backfilling after the mill ceased operations in 1974. It was known that PCB and asbestos contamination was present in this area, but the nature and extent was unknown. This paper describes the use of remote intrusive investigations combined with assumptions regarding site characterization leading to a final assessment of soils in place, and that was utilized to successfully address the problem.

Key words: Brownfields, PCB, asbestos

1. INTRODUCTION

The Former Oxford Paper Mill located in Lawrence, Massachusetts on the Spickett River, and near the river's confluence with the Merrimack River, is best known historically for the glossy paper it produced for use by National Geographic Magazine. By the early 1970s, the business had declined and passed through a several owners. Finally in 1983, the City of Lawrence took the property for back taxes. Trespassers and illegal activities were a frequent problem at the property and subsequently the buildings on the north side of the raceway were demolished. During the demolition process, (for unknown reasons) a strip of the property 35 feet wide and about 200 feet long that abutted the raceway was only demolished to grade level and substantial subsurface voids remained. These subsurface voids made the surface unstable for site activities and the area was cordoned off to prevent trespassers.

The idea of a "Gateway Project," which combined the redevelopment of Brownfields sites in the area with a new bridge over the Spickett River, was developed in the mid 1990s. The City of Lawrence, with funding from various sources, began a program to use the Former Oxford Paper Mill Site as a passive park and for part of the new Bridge over the Spickett River. As part of the project, the 35-foot wide strip was to be excavated, stabilized, and left with a 2:1 slope to the existing water-power raceway.

As part of this site restoration, remediation of soil and groundwater to MassDEP and EPA standards was required. At one point during site investigations, concern was raised when a wipe sample of a brick wall overlooking the north raceway was found to have very high levels of PCBs; the possibility of significantly elevated levels of contamination, including PCBs in that area, was raised. Due to the potential for significant contamination, it was necessary to determine as much as reasonably possible regarding environmental conditions on the 35-foot wide strip of land prior to excavation and disposal.

2. MATERIAL AND METHODS

Various methods of site access for intrusive investigations were reviewed. All vehicle and even personnel travel on the 35-foot wide strip was deemed to be unsafe, as subsidence was clearly seen. All options were reviewed.

A truck-mounted hollow stem auger rig or Geoprobe®, or other specialty rig, was eliminated from consideration due to the unknown subsurface conditions with observed subsidence. A remotely-operated Geoprobe® or track-mounted rig was considered but eliminated from consideration since the ground was too uneven to provide for mobility. In a like manner, tripod rigs and similar manually operated equipment were eliminated from consideration. It was clear that the equipment used would need to be positioned on stable ground next to the 35 foot wide area, and some manner of sampling would be used to obtain samples remotely. After due consideration, it was decided to use a backhoe/excavator to dig 10 evenly spaced test pits.

3. RESULTS

The excavation of the 10 test pits was conducted without any significant problems. The most significant issue was that, due to the presence of foundations in a few locations, the location of the test pit moved slightly with only a marginal increase in the ability to obtain samples at depth. However, all stakeholders agreed that, based on the results of the test pits, excavation and disposal of the wedge materials could be contracted for with a degree of certainty regarding construction costs.

4. DISCUSSION AND CONCLUSIONS

Without major issues, the strip was excavated and disposal of the material completed. Additional soil borings were conducted near the foot of the slope and concentrations of constituents of concern were well within the limits found during previous investigations at the site. The most significant issue became the presence of limestone material that apparently had been used by the paper mill. The limestone raised the pH of the soil close to 12, eliminating some disposal sites. However, in the end, the project was successfully completed.